REPT

WATER QUALITY INDICES OF STREAMS IN THE MINISTRY OF THE ENVIRONMENT CENTRAL REGION

Based on 1978 Data

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1979
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Ontario
Ministry of the Environment

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WATER QUALITY INDICES OF STREAMS

IN

THE MINISTRY OF THE ENVIRONMENT

CENTRAL REGION

based on 1978 Data

This report is the product of an
Experience '79 project.
Ms. Helen Chew and Ms. Sheila Donlon,
Experience '79 students, prepared the
data, summaries and maps.

Text Prepared by:

Water Resources Assessment
Technical Support Section
Central Region

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1. INTRODUCTION

Since the mid-1960's, the Ministry of the Environment and its predecessor the Ontario Water Resources Commission, have been monitoring the water quality of many streams and rivers throughout the Province. The monitoring program consists of visiting preselected stream locations, carrying out some analyses on site (example: temperature, dissolved oxygen), and collecting water samples for subsequent physical, chemical and bacteriological analyses at one of the Ministry of the Environment laboratories. The field work is carried out partly by Ministry of the Environment staff, and partly by staff of local conservation authorities.

In the Central Region of the Ministry, about 200 stream locations are presently monitored. With some exceptions, visits to each monitoring location are made about once per month.

All data obtained through the water quality monitoring program are available to the public on request.

Although the data are routinely used to assess stream problems and to assess the degree of compliance with Ministry criteria, little attempt had previously been made to outline and summarize the water quality data available for the Central Region. In 1979, the Ministry received funding approval for an Experience '79 Program to summarize and illustrate the water quality data using 1978 data. Although many physical, chemical and bacteriological analyses are carried out, only 9 of the more important parameters were selected for this report: phosphorus, ammonia, nitrate, kjeldahl nitrogen, 5-day biochemical oxygen demand, fecal coliform bacteria, dissolved oxygen, suspended solids and conductivity.

The folded map on the back cover of this report illustrates the stream monitoring locations for which the data are outlined and

discussed. Also on this map, is a listing of sampling locations relating the map numbers and locations to the complete reference code for each location. The reference code is required to access the complete record of data for a particular station.

It should be noted that for each of the 9 parameters, the average 1978 concentration was plotted only if 5 or more individual values were available for averaging. At a number of locations, there were 5 or 6 measurements for one parameter, but less than 5 measurements for another parameter. For this reason, the number of stations plotted for each parameter varies. However, the majority of monitoring stations have in the order of 10 to 12 measurements for each of the 9 parameters, including measurements from all seasons of the year.

This report will hopefully serve many purposes, including:

a) establishing a clearer definition of problem areas which warrant greater environmental attention;

b) providing a sharper focus on which water quality problems are of greatest concern;

c) supplying a reference to which any water quality evaluator can relate to.

2. PRECAUTIONS IN DATA INTERPRETATION

Although this report is intended to "map out" the water quality of streams in the Central Region of the Ministry, it is very important that the reader understand the following two precautions in interpreting the presentation:

1. the monitoring program, in general, can be effectively used to detail only a part of the overall stream water quality. The program has historically emphasized the traditional

water-quality concerns such as oxygen-consuming organics, nutrients, dissolved oxygen and turbidity. There are many other important environmental aspects related to stream quality, including acid precipitation, persistent organics (examples: PCB's, pesticides), and heavy metal contamination (example: mercury). Although some of these more recent environmental issues can be partially evaluated with data from the stream monitoring program, this report does not address them.

2. the stream monitoring program does not accurately reflect typical stream quality throughout the region. Firstly, there is a concentration of sampling in the most populated parts of the region where water quality is expectedly poorest. Secondly, there is a concentration of stations just downstream of treated waste inputs (below sewage treatment plants) so that the Ministry can monitor impact. Thirdly, on many streams, sampling locations are at the stream mouths where water quality tends to be poorer compared to that of, headwater areas.

3. DATA PRESENTATION

In the following data presentation, several references will be made to the "Water Management" objectives of the Ministry. These objectives are outlined in detail in the November, 1978 "blue book" publication entitled "Water Management - Goals, Policies, Objectives and Implementation Procedures of the Ministry of the Environment". Where possible, the data displayed is related to the objectives of the Ministry in the Water Management booklet.

Phosphorus

In general, phosphorus levels are lowest in the northern part of the region, and highest in the southern part of the region.

According to the Ministry's water management objectives, "excessive plant growth in the rivers and streams should be eliminated at a total phosphorus concentration of 30 ug/l". More than half of the monitoring stations had average phosphorus values exceeding this 30 ug/l figure. Hence, many stream areas would theoretically be expected to support heavy growth of aquatic plants. In fact, field observations have revealed that while aquatic plants do flourish in some nutrient enriched stream areas (example: Oakville Creek, Milton), the growth may be limited because of limited substrate, stream bed scouring or by turbidity.

The 10 stations with highest phosphorus values are all located in and near Toronto where population and land use is heaviest. Four of these 10 stations are on the East Holland River which is influenced by treated sewage discharges from Aurora and Newmarket. Three stations are on the Don River which is affected by 4 sewage treatment plant discharges, as well as by the general urban drainage impact. Two stations are situated on Duffin Creek, both elevated in phosphorus because of sewage treatment plant discharges. Another station, on Pringle Creek, has elevated phosphorus because of a sewage treatment plant discharge.

It is evident that in general, the highest stream phosphorus values in the region can be linked to sewage treatment plant discharges.

Ammonia

Ammonia levels tend to be favourably low throughout most of the Central Region. However, many of the monitoring locations in the vicinity of Metropolitan Toronto did have elevated concentrations.

The main environmental concern over elevated ammonia levels relates to its potential for toxicity to aquatic life. The un-ionized portion of the ammonia is the toxic fraction, and the degree of ionization is temperature and pH dependent. As per the Ministry's water management objectives, the "concentrations of un-ionized ammonia should not exceed 0.02 mg/l". As 1978 pH data are not available, the degree of toxicity at the monitoring stations cannot be accurately assessed.

The 10 stations with highest ammonia levels were as follows: 4 on the East Holland River, 3 on the Don River, 1 on the Humber River, 1 on Duffin Creek, 1 on the Credit River. The elevated ammonia levels at 7 of these ten locations can be attributed to sewage treatment plant discharges. At the remaining three locations (nos. 2, 4, 10), either sewage treatment plants are partially responsible (nos. 2 and 4), or the source is largely unknown. At the stations with the highest ammonia levels it is expected that some degree of ammonia toxicity occurs periodically.

Nitrate

In general, nitrate levels were low in the northeast part of the region, and elevated in the urbanized southwest part of the region.

While fish and other aquatic life can tolerate a high level of nitrate, nitrates in drinking water supplies can be of health concern if the nitrate level exceeds 10 mg/l as N (Water Management Guidelines). At all monitoring locations, the nitrate level averaged less than 10 mg/l.

The 10 locations with highest nitrate levels are all located in the southwest part of the region. Eight of the 10 are elevated because of sewage treatment plant discharges. At the other 2 locations, (3 and 6), the reasons for the elevated nitrate levels are unknown.

Kjeldahl Nitrogen

Kjeldahl nitrogen, a measure of the amount of organic nitrogen plus ammonia in the water, was elevated at many locations in and near Metropolitan Toronto. At most locations where Kjeldahl nirogen was low, ammonia concentrations made up a small percentage (less than 10 present) of the Kjeldahl nitrogen. However, where Kjeldahl nitrogen was high, ammonia tended to constitute a much larger fraction of the Kjeldahl value (30 to 50 percent). For this reason, 8 of the 10 locations with the highest Kjeldahl values were also in the list of 10 "worst" ammonia stations. Five of the 10 "worst" Kjeldahl stations were on the Holland River watershed, 3 on the Don River, 1 on Duffin Creek, and 1 on Pringle Creek. All but one of these 10 (no. 7) can be directly or indirectly related to sewage treatment plant discharges.

Five-Day Biochemical Oxygen Demand (BOD_5)

In general, levels of BOD_5 tended to be favourably low in the northern parts of the region and elevated in the more urbanized areas of the southern part of the region.

BOD_5 is a measure of the oxygen consuming power of materials in the water. It is desirable to maintain BOD_5 levels as low as possible so that oxygen levels remain at satisfactory levels to support aquatic life.

As there is no readily apparent relationship between the dissolved oxygen map and the BOD_5 map, it would appear that the BOD_5 levels found in the region are not elevated to a point where oxygen is reduced down to critically low levels.

The 10 "worst" stations for BOD_5 include 4 on the Holland River watershed, 3 on the Don River, 1 on the Humber River, 1 on Pringle Creek and 1 on Grindstone Creek. The elevated BOD_5 at 8 of these 10 stations can be attributed to sewage treatment plant discharges. At the remaining 2 stations (nos. 3 and 4), the reasons are unknown.

Although elevated BOD_5 values can often be correlated with treated waste discharges, it is evident that in general, sewage treatment plants now remove BOD_5 to a point where the remaining load to the stream exerts an acceptable level of oxygen demand.

Fecal Coliform

Levels of fecal coliforms, were, in general, favourably low at most of the monitoring stations, particularly those in the northern part of the region. A number of locations in the more populated southern part of the region, however, did have elevated fecal coliform levels.

Of the 10 locations with highest fecal coliform concentrations, 3 were located on the Don River, 4 on the Holland River, 2 on the Humber River, and 1 on Harmony Creek at Oshawa.

The fecal coliform levels could not be specifically correlated with any one type of land use or pollution source. Beyond the well recognized assumption that urbanization and agricultural activities tend to increase fecal coliform levels, one cannot further define the bacterial sources from this monitoring information.

The Provincial Water Quality Objective relating to the swimming and bathing use of water states that: "a potential health hazard exists if the fecal coliform geometric mean density exceeds 100/100 mls". At a number of monitoring locations in the more populated part of the region, this objective is not met. A real potential health hazard only exists if the streams at these locations are used for swimming and bathing.

Dissolved Oxygen

The dissolved oxygen map illustrates that unlike most other parameters, it is difficult to correlate high or low average values to urbanization, basin geology or agricultural use.

As per the Ministry's "Water Management" guidelines, minimum levels of dissolved oxygen should never fall below individual measurements ranging from 47% to 63% saturation, depending on the type of aquatic life and water temperature. The average day time values, outlined on the dissolved oxygen map, indicate that in general, day time averages are in compliance with the Provincial guidelines. However, as dissolved oxygen values fluctuate diurnally due to photosynthesis, the existing data do not allow a detailed analysis as to how many monitoring locations are in compliance diurnally.

Suspended Solids

In general, average levels of suspended solids were low in the northern part of the region, and elevated at many locations in the southern part of the region.

High concentrations of suspended solids, which produce stream turbidity, resulted from a wide variety of active land disturbances (example: road construction, urban construction, stream channelization, agricultural use). Because stream turbidity problems are often temporary, the locations of the problem areas vary considerably from one period of time to the next. For this reason, the "worst" 10 locations are not identified on the accompanying map.

Elevated stream turbidity can result in a wide variety of ecological and human use problems, including:

a) the blanketing of fish spawning beds;

b) destruction of benthic invertebrates;

c) aesthetic depreciation; and

d) the clogging of irrigation systems.

There will have to be greater environmental emphasis on stream turbidity control in the future to prevent these adverse effects.

Conductivity

Conductivity, which reflects the total dissolved solids content of water, was low in the pre-cambrian northern part of the region, and higher in the sedimentary southern part of the region. This difference between north and south is no doubt largely a natural result of local geological character.

Most of the locations with elevated conductivity are located in the more urbanized parts of the region. Winter road salting is largely responsible for these elevated measurements. However, other factors such as urban and agricultural drainage, treated waste discharges and general land disturbances aggravate the situation.

4. GENERAL DISCUSSION

The data revealed that in general, stream water quality is closely linked with population density. The sparsely populated northern part of the region tends to have good stream quality, while the more densely populated southern part of the region has poorer stream quality. More specifically, the water quality in many cases can be related to the effluent discharges from sewage treatment plants.

For 7 of the 9 parameters outlined, the "worst" 10 stations were identified. The following map illustrates those monitoring stations

at which 1 or more of the 7 parameters fell within the 10 "worst" listing. Combining the information on this map with the general water quality knowledge of the Ministry, one can conclude that there are two rivers in the Central Region which have widespread water quality problems. One is the Don River, and the other, the Holland River (particularly the East Holland River). In both cases, significant improvements could be made in river quality by removing sewage plant discharges from the basins, or by incorporating a high level of treatment at these plants. The York/Durham sewage system, presently under construction, will remove three of the four existing sewage treatment plant discharges from the Don River. Similarly, connecting Aurora and Newmarket with the York/Durham system would improve water quality in the Holland River.

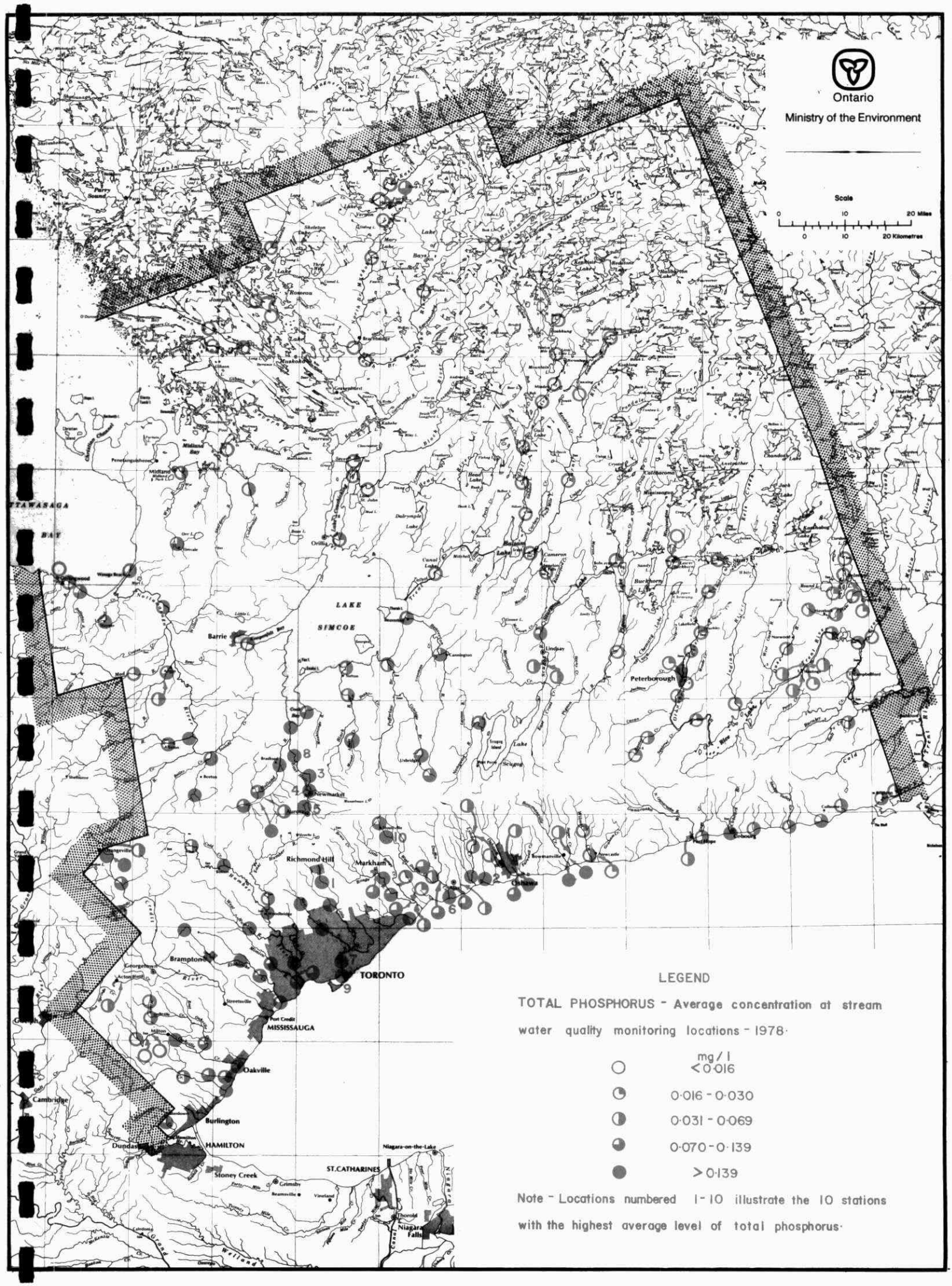
There are three other localized stream sections where efforts to improve water quality are warranted:

1. Black Creek tributary to the Humber River;

2. Pringle Creek (R.M. of Durham) downstream of the Pringle Creek Sewage Treatment Plant; and

3. the bottom end of Duffin Creek downstream of the Ajax and Pickering Sewage Treatment Plants.

On Black Creek a survey should be undertaken to determine the source(s) of impairment. The Pringle Creek problem could be reduced through improved treatment, or by removing the effluent from the stream. The Duffin Creek problem is being rectified, as the Pickering and Ajax plants are being removed from service in light of the new York/Durham sewage system.

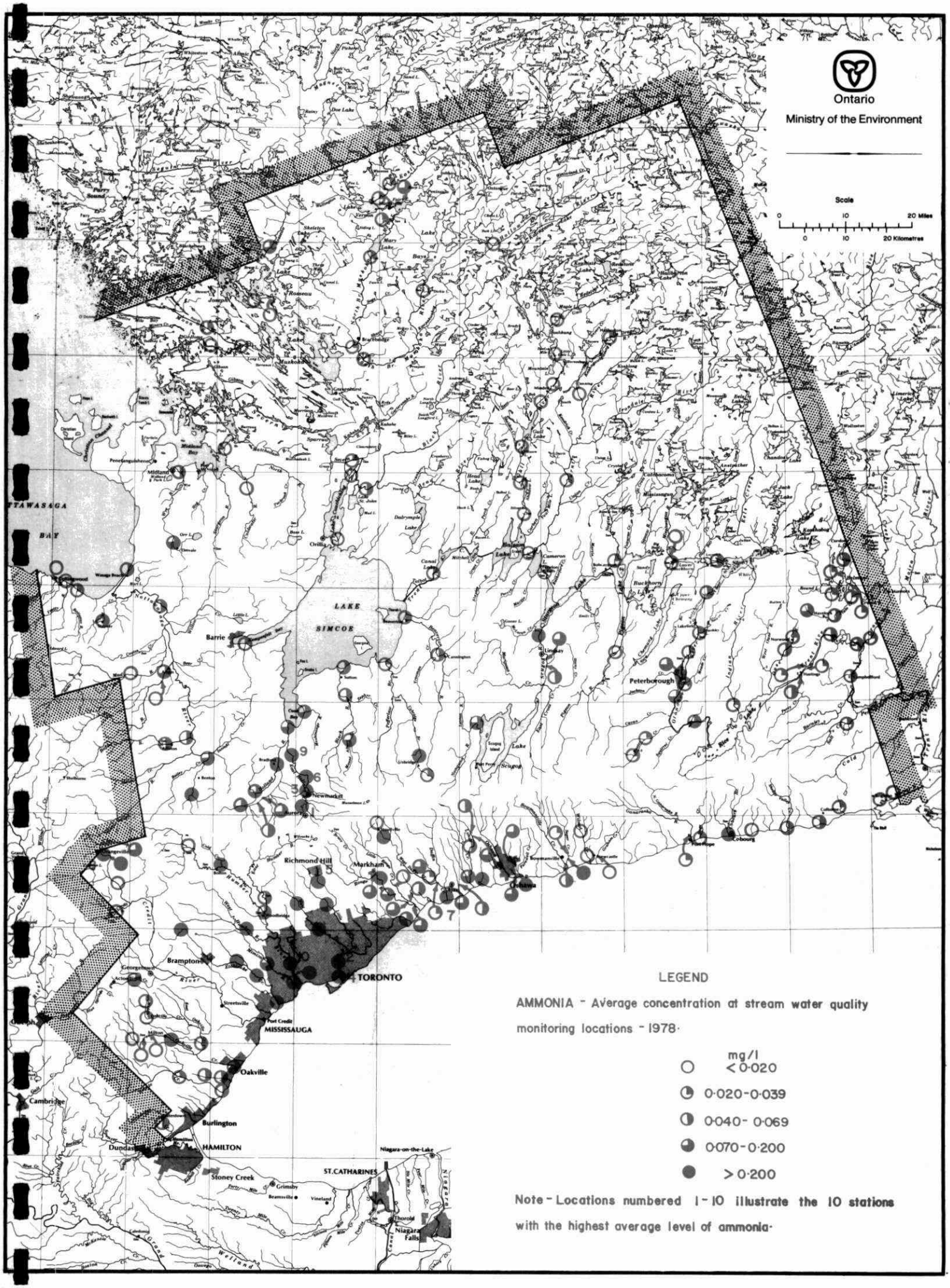


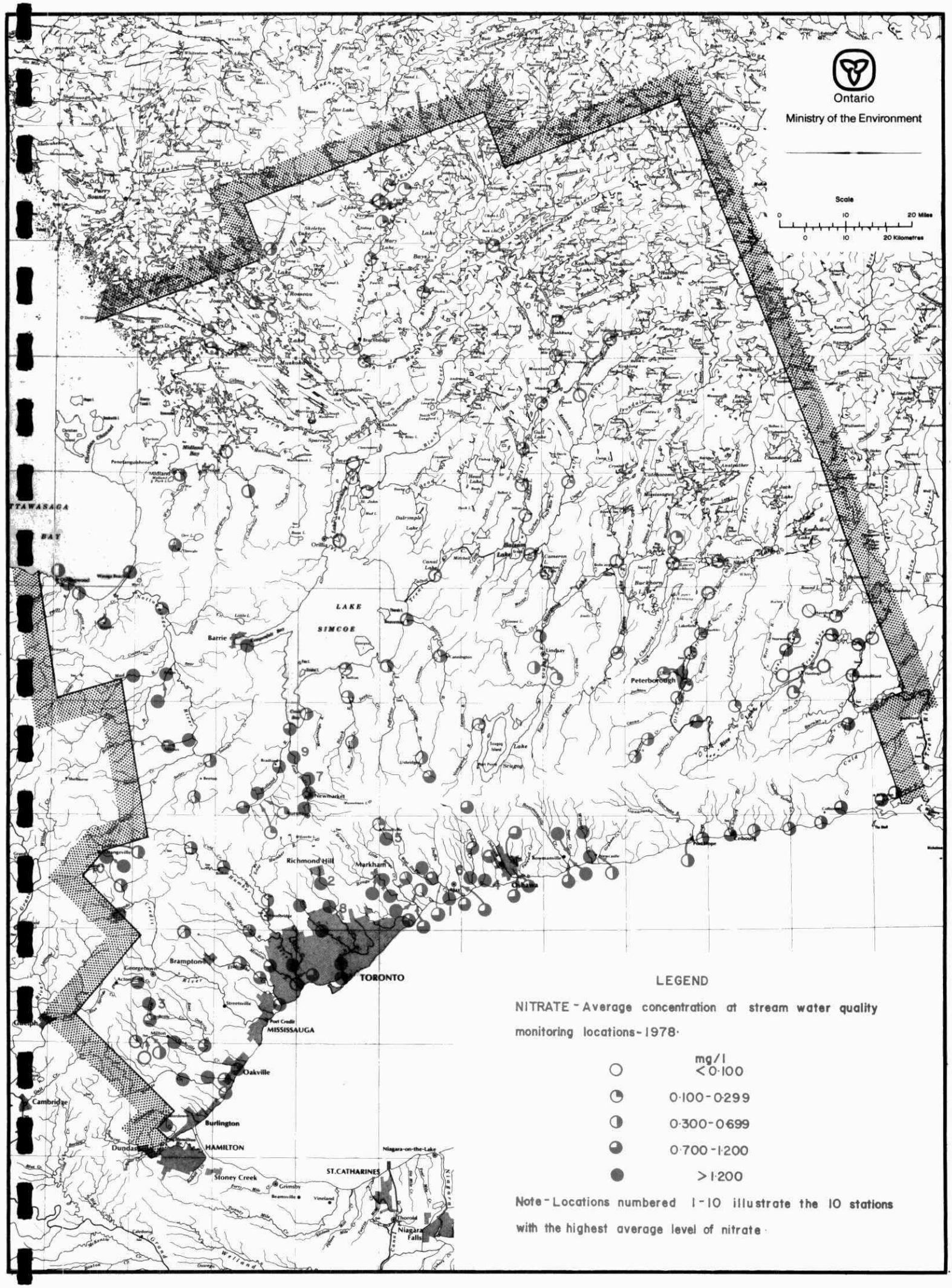
LEGEND

TOTAL PHOSPHORUS - Average concentration at stream water quality monitoring locations - 1978.

	mg/l
○	<0.016
◔	0.016 - 0.030
◑	0.031 - 0.069
◕	0.070 - 0.139
●	>0.139

Note - Locations numbered 1-10 illustrate the 10 stations with the highest average level of total phosphorus.


Ontario
Ministry of the Environment
Scale
0 10 20 Miles
0 10 20 Kilometres
LAKE SIMCOE
Barrie
Midland
Orillia
Lindsay
Peterborough
Cobourg
Newmarket
Richmond Hill
Markham
Oshawa
TORONTO
Brampton
Georgetown
Streetsville
Port Credit
MISSISSAUGA
Oakville
Cambridge
Burlington
Dundas
HAMILTON
Stoney Creek
Grimsby
Beamsville
Vineland
ST.CATHARINES
Niagara-on-the-Lake
Thorold
Niagara Falls
Welland
Georgian Bay
Lake Scugog
Rice Lake
Buckhorn Lake
Pigeon River
Niagara River
Grand River
Credit River
Humber River
Don River
Rouge River
Duffins Creek
Highway 401
Highway 400
Highway 404
Highway 427
Queen Elizabeth Way
LEGEND
AMMONIA - Average concentration at stream water quality monitoring locations - 1978.
mg/l
< 0·020
0·020-0·039
0·040- 0·069
0·070-0·200
> 0·200
Note - Locations numbered 1 - 10 illustrate the 10 stations with the highest average level of ammonia.

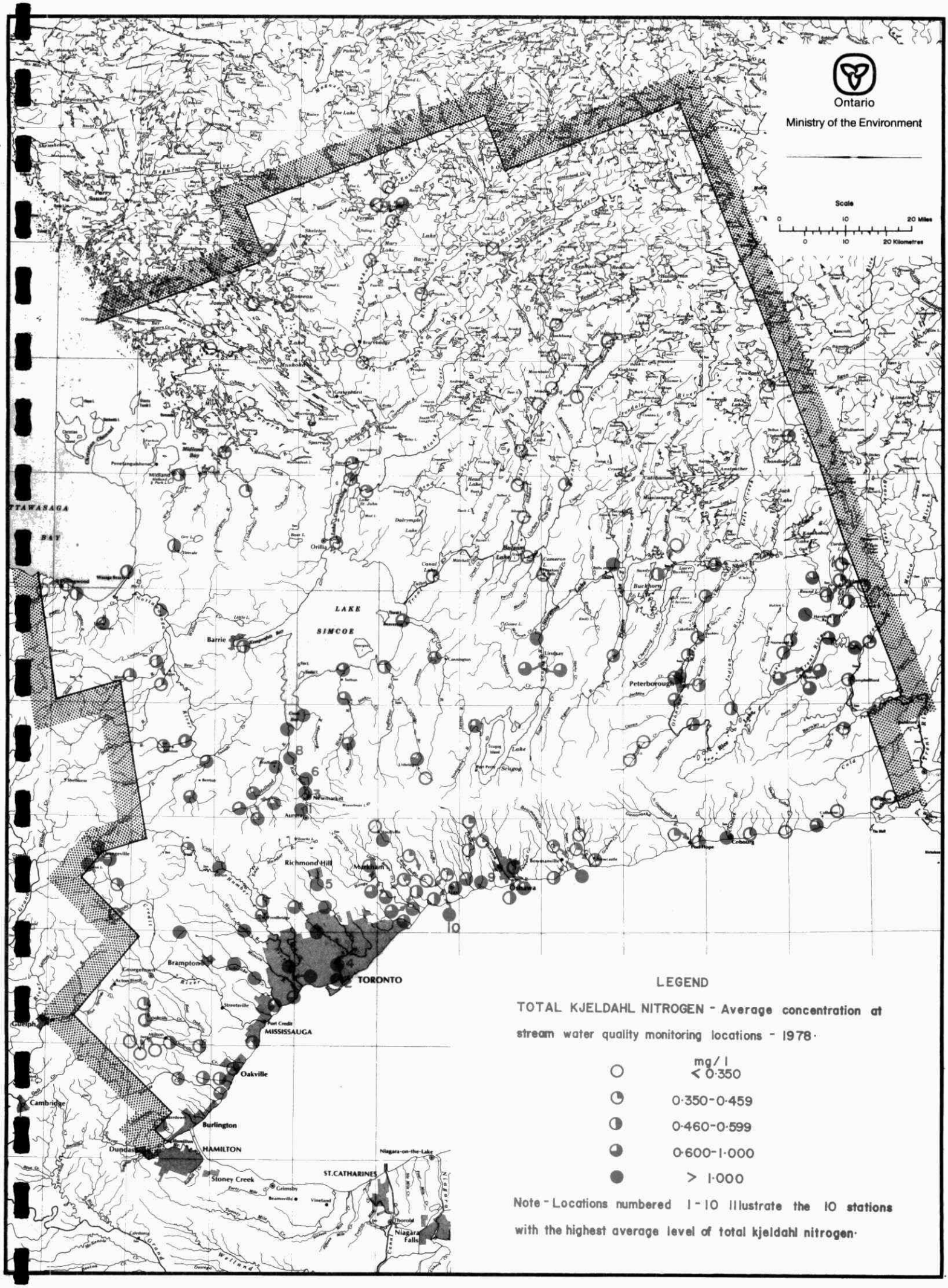


LEGEND

NITRATE - Average concentration at stream water quality monitoring locations - 1978.

	mg/l
○	<0.100
◔	0.100 - 0.299
◑	0.300 - 0.699
◕	0.700 - 1.200
●	>1.200

Note - Locations numbered 1 - 10 illustrate the 10 stations with the highest average level of nitrate.

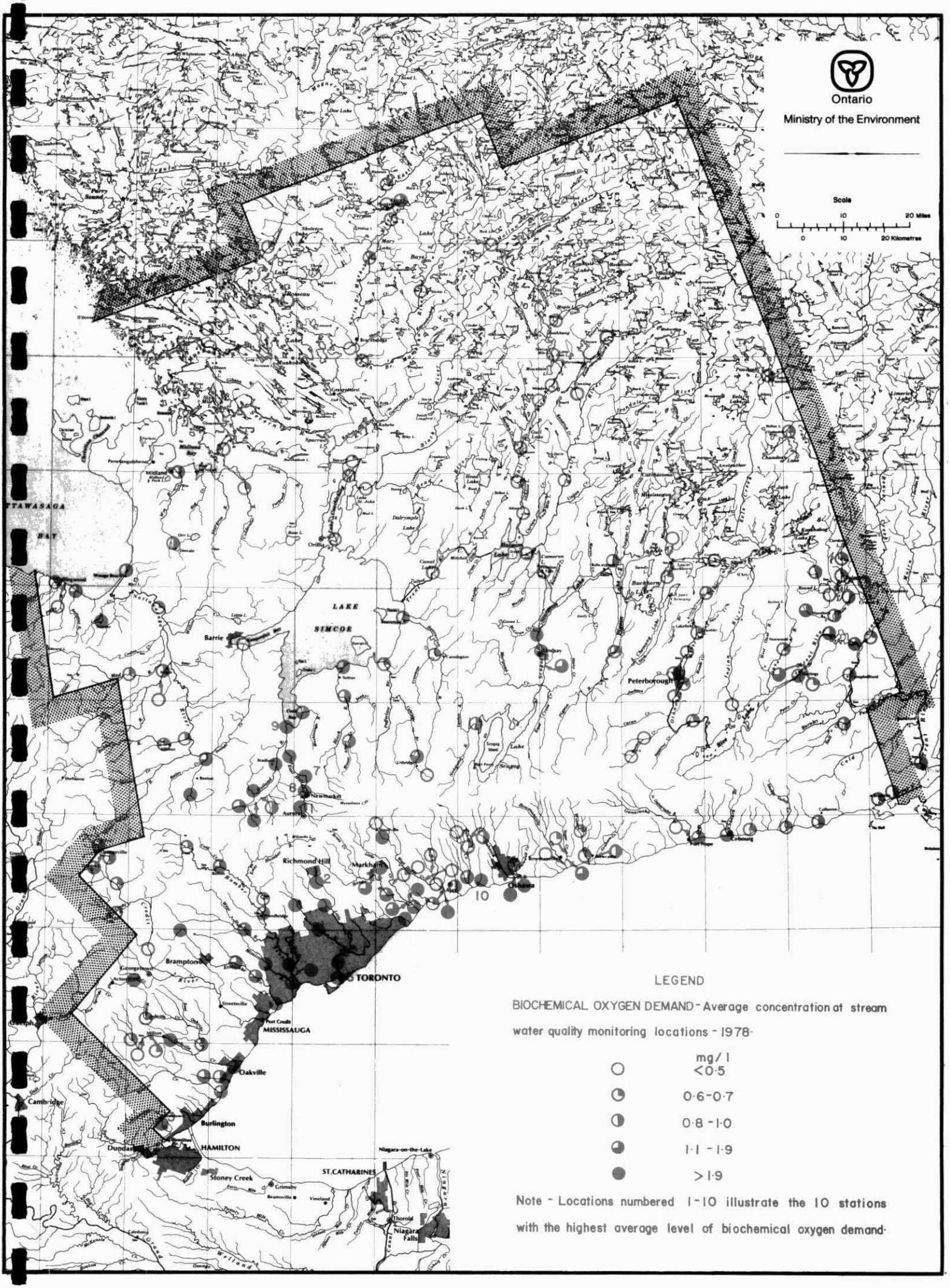


LEGEND

TOTAL KJELDAHL NITROGEN - Average concentration at stream water quality monitoring locations - 1978.

	mg/l
○	< 0.350
◔	0.350-0.459
◑	0.460-0.599
◕	0.600-1.000
●	> 1.000

Note - Locations numbered 1 - 10 illustrate the 10 stations with the highest average level of total kjeldahl nitrogen.

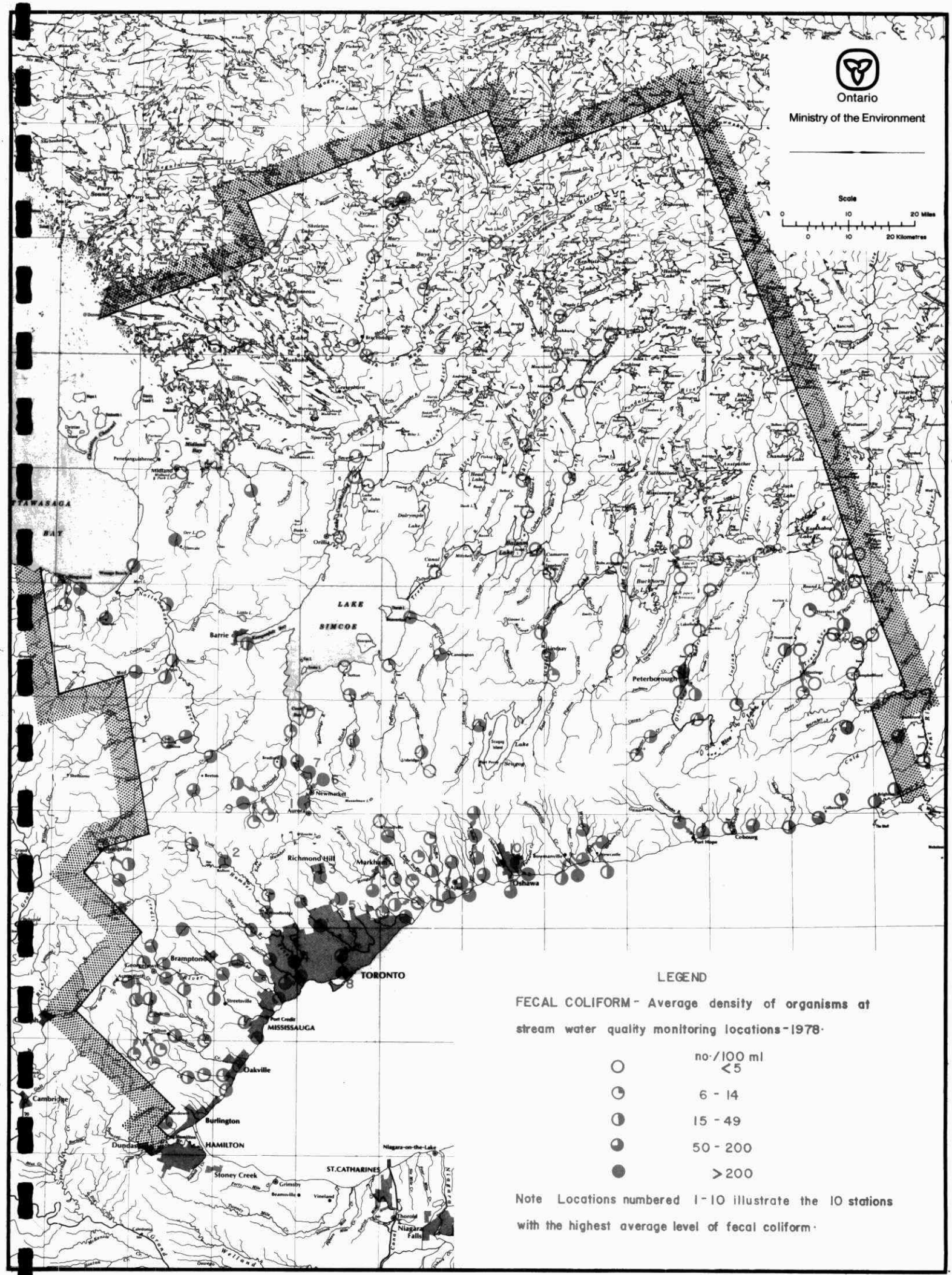


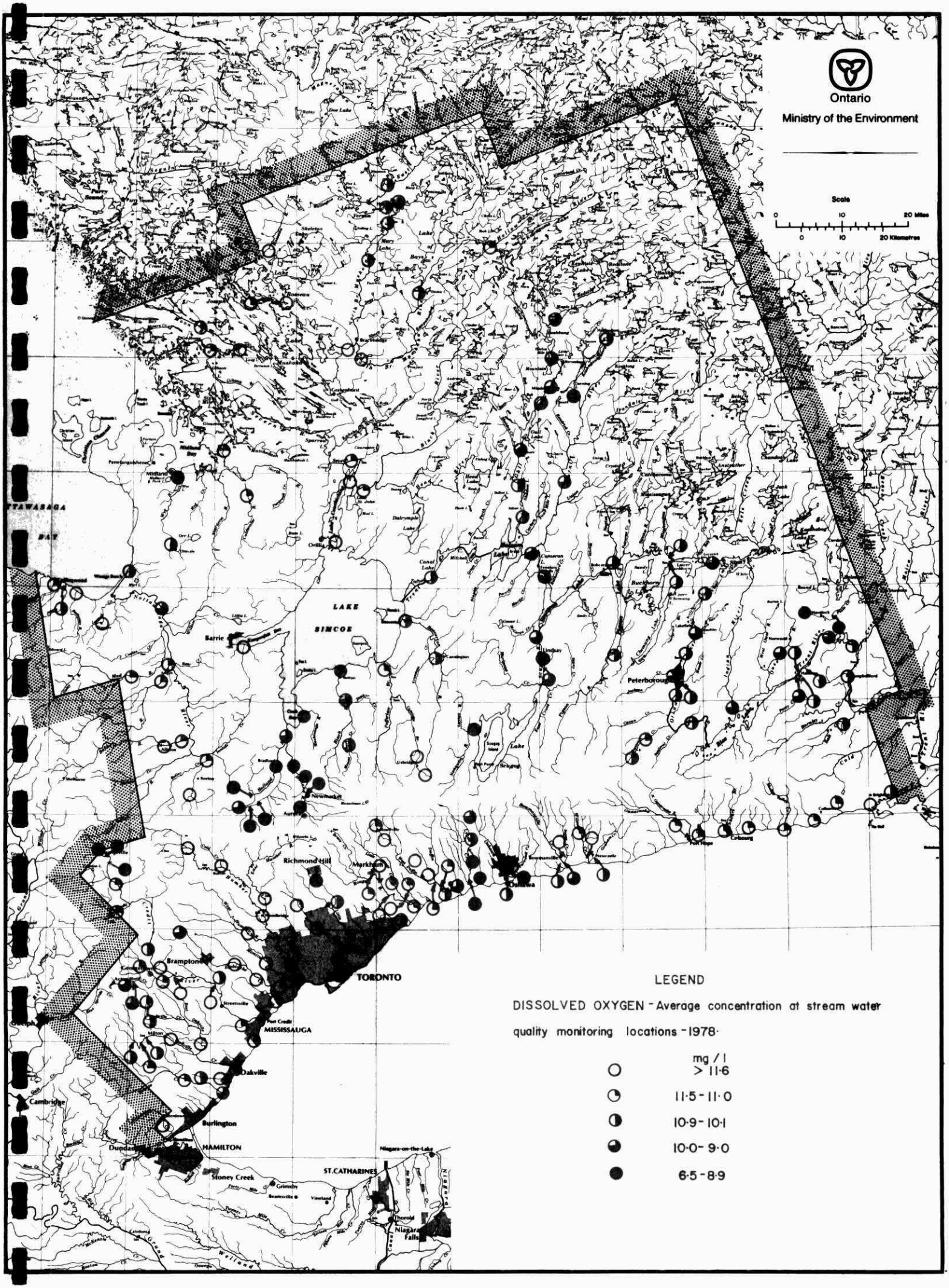
LEGEND

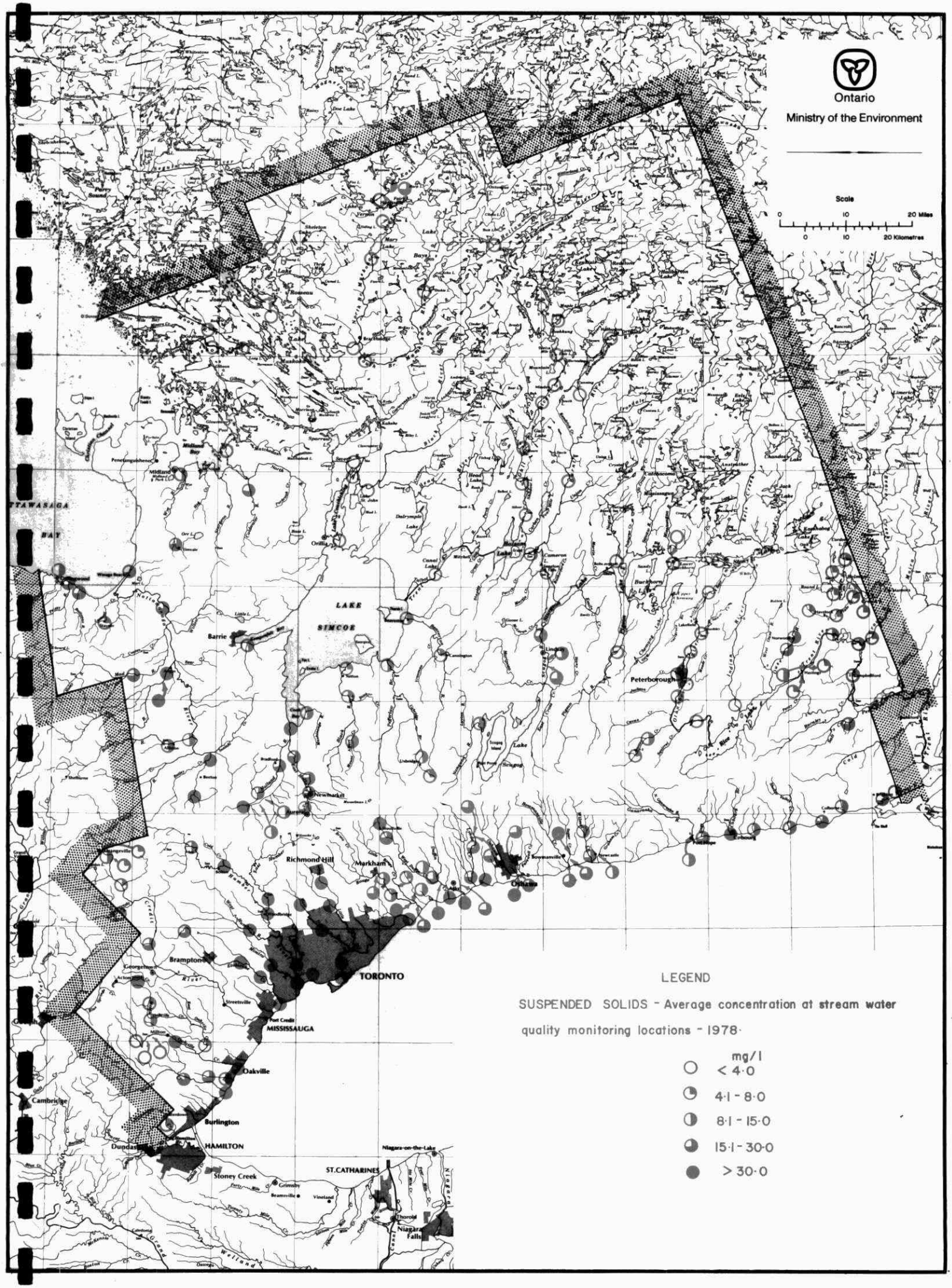
BIOCHEMICAL OXYGEN DEMAND - Average concentration at stream water quality monitoring locations - 1978.

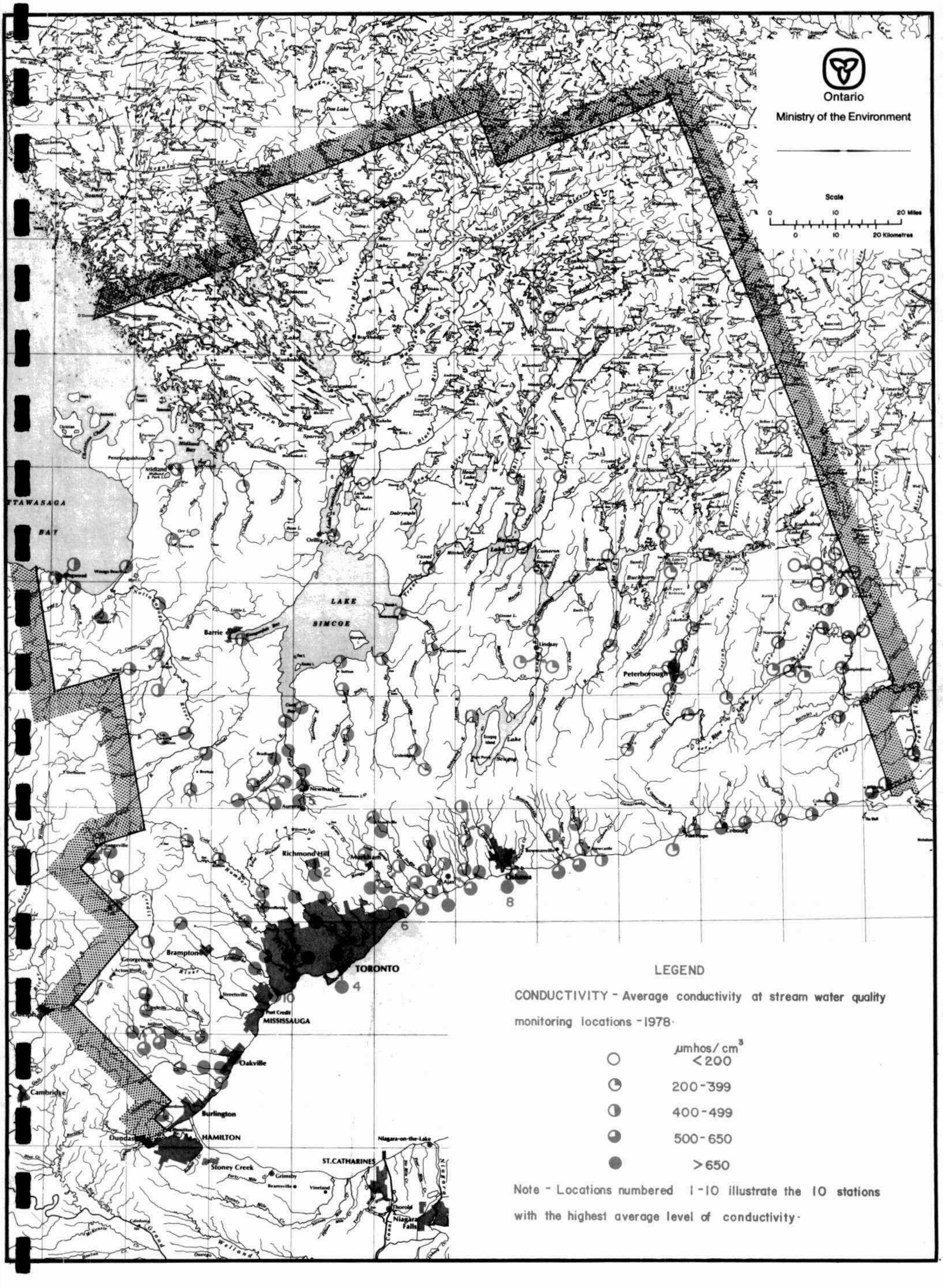
	mg/l
○	<0·5
◔	0·6-0·7
◑	0·8-1·0
◕	1·1-1·9
●	>1·9

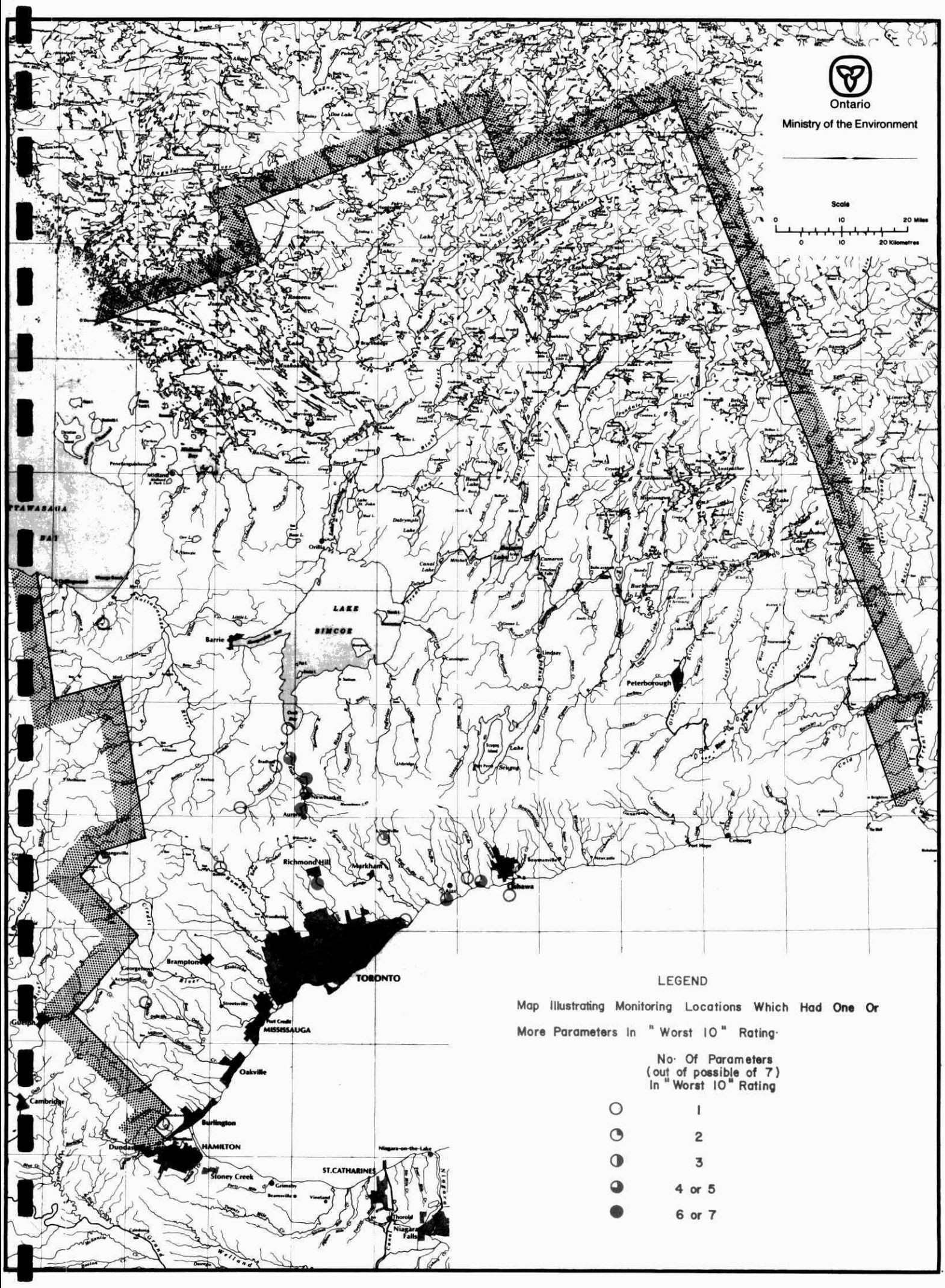
Note - Locations numbered 1-10 illustrate the 10 stations with the highest average level of biochemical oxygen demand.


Ontario
Ministry of the Environment
Scale
0 10 20 Miles
0 10 20 Kilometres
LAKE SIMCOE
Barrie
Orillia
Newmarket
Aurora
Richmond Hill
Markham
Pickering
Ajax
Oshawa
Whitby
Peterborough
Lindsay
Cobourg
Port Hope
Brampton
TORONTO
Streetsville
Port Credit
MISSISSAUGA
Oakville
Burlington
Dundas
HAMILTON
Stoney Creek
Grimsby
Beamsville
Vineland
ST.CATHARINES
Niagara-on-the-Lake
Thorold
Niagara Falls
Cambridge
Midland
Penetanguishene
Georgian Bay
Lake Ontario
Lake Erie
Welland River
Niagara River
LEGEND
FECAL COLIFORM - Average density of organisms at stream water quality monitoring locations - 1978.
no./100 ml
<5
6 - 14
15 - 49
50 - 200
>200
Note Locations numbered 1-10 illustrate the 10 stations with the highest average level of fecal coliform.


Ontario
Ministry of the Environment
Scale
0 10 20 Miles
0 10 20 Kilometres
LAKE SIMCOE
Barrie
Orillia
Midland
Peterborough
Lindsay
Cobourg
Port Hope
Newmarket
Aurora
Richmond Hill
Markham
Scarborough
Oshawa
Bramptonn
TORONTO
Port Credit
MISSISSAUGA
Oakville
Milton
Cambridge
Burlington
Dundas
HAMILTON
Stoney Creek
Grimsby
Beamsville
Vineland
ST.CATHARINES
Niagara-on-the-Lake
Thorold
Niagara Falls
LEGEND
DISSOLVED OXYGEN - Average concentration at stream water quality monitoring locations - 1978.
mg / l
> 11·6
11·5 - 11·0
10·9 - 10·1
10·0 - 9·0
6·5 - 8·9


Ontario
Ministry of the Environment
Scale
0 10 20 Miles
0 10 20 Kilometres
LAKE SIMCOE
TORONTO
MISSISSAUGA
HAMILTON
ST.CATHARINES
Barrie
Orillia
Peterborough
Newmarket
Richmond Hill
Markham
Brampton
Oakville
Burlington
Dundas
Stoney Creek
Grimsby
Niagara Falls
Thorold
Oshawa
Bowmanville
Cambridge
Georgetown
Midland
Penetanguishene
LEGEND
SUSPENDED SOLIDS - Average concentration at stream water quality monitoring locations - 1978.
mg/l
< 4.0
4.1 - 8.0
8.1 - 15.0
15.1 - 30.0
> 30.0


Ontario
Ministry of the Environment
Scale
0 10 20 Miles
0 10 20 Kilometres
LEGEND
CONDUCTIVITY - Average conductivity at stream water quality monitoring locations - 1978.
μmhos/cm³
<200
200-399
400-499
500-650
>650
Note - Locations numbered 1-10 illustrate the 10 stations with the highest average level of conductivity.
LAKE SIMCOE
TORONTO
MISSISSAUGA
HAMILTON
Oakville
Burlington
Dundas
Stoney Creek
Grimsby
ST.CATHARINES
Niagara-on-the-Lake
Niagara Falls
Thorold
Brampton
Georgetown
Richmond Hill
Markham
Newmarket
Aurora
Barrie
Orillia
Peterborough
Lindsay
Oshawa
Bowmanville
Cobourg
Port Hope
Midland
Penetanguishene
Guelph
Cambridge
Streetsville
Port Credit
Bracebridge
Bancroft
Canal Lake
Balsam Lake
Cameron
Dalrymple Lake
Buckhorn
Scugog Lake
Scugog Island
Georgian Bay
Nottawasaga Bay
Wasaga Beach
1
2
4
5
6
8
10


Ontario
Ministry of the Environment
Scale
0 10 20 Miles
0 10 20 Kilometres
LAKE SIMCOE
Barrie
Peterborough
Richmond Hill
Markham
Aurora
Newmarket
Brampton
TORONTO
MISSISSAUGA
Oakville
Burlington
HAMILTON
Dundas
Stoney Creek
Cambridge
Guelph
ST.CATHARINES
Niagara-on-the-Lake
Thorold
Niagara Falls
LEGEND
Map Illustrating Monitoring Locations Which Had One Or More Parameters In "Worst 10" Rating.
No. Of Parameters (out of possible of 7) In "Worst 10" Rating
1
2
3
4 or 5
6 or 7

WATER QUALITY INDICES OF STREAMS IN THE MINISTRY OF THE ENVIRONMENT'S CENTRAL REGION

Internal Distribution List

W. Bidell	Assistant Deputy Minister
J.W. Giles	Assistant Deputy Minister
R.J. Frewin	Director, Information Services Branch
K.E. Symons	Director, Pollution Control Branch
D.P. Caplice	Director, Environmental Approvals Branch
G.C. Ronan	Director, Laboratory Services Branch
R.M. Gotts	Director, Northwestern Region
R.E. Moore	Director, Southeastern Region
D.A. McTavish	Director, Southwestern Region
G.H. Mills	Director, West-Central Region
C.E. McIntyre	Director, Northeastern Region
G.R. Trewin	Assistant Director, Central Region
S.E. Salbach	Supervisor, Water Resources Branch
R.C. Hore	Supervisor, Water Resources Branch
M.O.E. Library	135 St. Clair Avenue West
M.O.E. Library	Laboratory, Resources Road
M.O.E. Library	Central Region

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Port Hope, Ontario.
L1A 3W4

Otonabee Region Conservation Authority,
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Peterborough, Ontario.
K9J 1Z2

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Halton Region Conservation Authority,
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Milton, Ontario.

Credit Valley Conservation Authority,
Meadowvale, Ontario.

South Lake Simcoe Conservation Authority,
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Newmarket, Ontario.

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Queen's Park,
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Regional Director,
Central Region,
Ministry of Natural Resources,
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Richmond Hill, Ontario.
L4C 3C9

K.K. Irizawa,
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P0A 1K0

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Toronto, Ontario.
Att: Ms. Eva Marrow

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Conservation Authorities Branch,
Ministry of Natural Resources,
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Whitney Block,
99 Wellesley Street West,
Toronto, Ontario.
M7A 1W3

Ontario

Ministry of the Environment

CENTRAL REGION

Scale

10 0 10 20 Miles

10 0 10 20 Kilometres

NOTTAWASAGA BAY

LAKE SIMCOE

L A K E O N T A R I O

REFERENCE MAP

● 129 Location and reference number of sampling site

REFERENCE MAP NO.	STREAM	REFERENCE CODE NO.
1	Grindstone Creek	09-0009-002
2	Bronte Creek	06-0060-001
3	Bronte Creek	06-0060-002
4	Fourteen Mile Creek	06-0061-001
5	Fourteen Mile Creek	06-0061-002
6	Oakville Creek	06-0063-001
7	Oakville Creek	06-0063-002
8	Oakville Creek	06-0063-009
9	Oakville Creek	06-0063-010
10	Oakville Creek	06-0063-008
11	East Oakville Creek	06-0063-011
12	Middle Oakville Creek	06-0063-003
13	Middle Oakville Creek	06-0063-007
14	Rattray Marsh	06-0068-001
15	Credit River	06-0076-002
16	Credit River	06-0076-017
17	Credit River	06-0076-003
18	Credit River	06-0076-013
19	Credit River	06-0076-010
20	Credit River	06-0076-018
21	Credit River	06-0076-006
22	Credit River	06-0076-020
23	Credit River	05-0076-019
24	Credit River Erin Branch	06-0076-015
25	Silver Creek	06-0076-012
26	West Credit River	06-0076-004
27	Black Creek	06-0076-005
28	Black Creek	06-0076-008
29	Credit River Erin Branch	06-0076-011
30	Etobicoke Creek	06-0080-001
31	Etobicoke Creek	06-0080-003
32	Etobicoke Creek	06-0080-002
33	Etobicoke Creek	06-0080-004
34	Mimico Creek	06-0082-001
35	Mimico Creek	06-0082-002
36	Humber River	06-0083-001
37	Black Creek	06-0083-012
38	Humber River	06-0083-003
39	East Humber River	06-0083-004
40	Humber River	06-0083-005
41	Humber River	06-0083-018
42	West Humber River	06-0083-002
43	Don River	06-0085-001
44	Don River	06-0085-013
45	West Don River	06-0085-002
46	West Don River	06-0085-004
47	East Don River	06-0085-003
48	German Mills Creek	06-0085-005
49	Highland Creek	06-0094-002
50	Rouge River	06-0097-005
51	Rouge River	06-0097-011
52	Rouge River	06-0097-012
53	Rouge River	06-0097-003
54	Rouge River	06-0097-002
55	Little Rouge Creek	06-0097-013
56	Little Rouge Creek	06-0097-006
57	Duffin Creek	06-0104-003
58	Duffin Creek	06-0104-001
59	Duffin Creek	06-0104-005
60	Stouffville Creek	06-0104-011
61	Stouffville Creek	06-0104-012
62	Ganateskiagon Creek	06-0104-024
63	Ganateskiagon Creek	06-0104-022
64	Urfe Creek	06-0104-026
65	Carruthers Creek	06-0107-001
66	Lynde Creek	06-0108-001
67	Lynde Creek	06-0108-002
68	Lynde Creek	06-0108-003
69	Lynde Creek	06-0108-004
70	Pringle Creek	06-0109-003
71	Oshawa Creek	06-0111-001
72	Montgomery Creek	06-0111-002
73	Harmoney Creek	06-0112-001
74	Bowmanville Creek	06-0116-001
75	Soper Brook	06-0116-002
76	Soper Brook	06-0116-003
77	Wilmot Creek	06-0117-003
78	Orono Creek	06-0117-002
79	Graham Creek	06-0118-001
80	Ganaraska River	06-0129-001
81	Gage Creek	06-0130-001
82	Cobourg Brook	06-0133-001
83	Brookside Creek	06-0139-002
84	Shelter Valley Brook	06-0142-001
85	Colborne Creek	06-0146-001
86	Salem Creek	06-0148-001
87	Proctors Creek	06-0151-001
88	Smithfield Creek	06-0152-001
89	Trent River	17-0021-045
90	Cold Creek	17-0021-046
91	Salt Creek	17-0021-071
92	Trent River	17-0021-002
93	Trent River	17-0021-057
94	Crowe River	17-0021-048
95	Trent River	17-0021-110
96	Trent River	17-0021-005
97	Trent River	17-0021-004
98	Trent River	17-0021-067
99	Indian River	17-0021-006
100	Otonabee River	17-0021-008
101	Baxter Creek	17-0021-077
102	Baxter Creek	17-0021-069
103	Otonabee River	17-0021-011
104	Otonabee River	17-0021-070
105	Jackson Creek	17-0021-038
106	Otonabee River	17-0021-013
107	Otonabee River	17-0021-065
108	Clear Lake Outlet	17-0021-016
109	Lovesick Lake Outlet	17-0021-017
110	Buckhorn Lake Outlet	17-0021-018
111	Mississauga River	17-0021-052
112	Ouse River	17-0021-066
113	Ouse River	17-0021-007
114	Plato Creek	17-0021-078
115	Plato Creek	17-0021-072
116	Plato Creek	17-0021-081
117	North River	17-0021-091
118	Crowe River	17-0021-082
119	Crowe River	17-0021-083
120	Crowe River	17-0021-084
121	North River	17-0021-092
122	Sturgeon Lake Outlet	17-0021-021
123	Pigeon River	17-0021-074
124	Scugog River	17-0021-116
125	Scugog River	17-0021-042
126	Scugog River	17-0021-041
127	Cameron Lake Outlet	17-0021-023
128	Balsam Lake Outlet	17-0021-054
129	Canal Lake Outlet	03-0077-012
130	Gull River	17-0021-025
131	Gull River	17-0021-076
132	Gull River	17-0021-032
133	Gull River	17-0021-043
134	Gull River	17-0021-044
135	Twelve Mile Lake Outlet	17-0021-035
136	Gull River	17-0021-036
137	Burnt River	17-0021-075
138	Drag River	17-0021-033
139	Head Lake Outlet	17-0021-037
140	Chandos Lake Outlet	17-0021-088
141	Paudash Lake Narrows	17-0021-090
142	Lake of Bays	03-0085-014
143	Lake of Bays Outlet	03-0085-009
144	East River	03-0085-032
145	Parrot Creek	03-0085-036
146	Lake Vernon Outlet	03-0085-008
147	Fairy Lake Outlet	03-0085-007
148	Mary Lake Outlet	03-0085-006
149	Muskoka River	03-0085-035
150	Muskoka River South	03-0085-004
151	Severn River	03-0077-023
152	Lake Couchiching Outlet	03-0077-026
153	Black River	03-0077-031
154	Lake Simcoe Outlet	03-0077-022
155	Beaverton River	03-0077-025
156	Beaverton River	03-0077-011
157	Nonquon River	17-0021-040
158	Uxbridge Brook	03-0077-032
159	Uxbridge Brook	03-0077-014
160	Pefferlaw Brook	03-0077-027
161	Black River	03-0077-008
162	Black River	03-0077-019
163	Mount Albert Creek	03-0077-021
164	Maskinonge (Jersey) River	03-0077-018
165	Holland River	03-0077-030
166	Holland River	03-0077-001
167	Holland River	03-0077-003
168	Holland River	03-0077-006
169	Aurora Creek	03-0077-007
170	Schomberg River	03-0077-002
171	Drainage Canal	03-0077-017
172	Schomberg River	03-0077-029
173	Drainage Canal	03-0077-004
174	Drainage Canal	03-0077-005
175	Lovers Creek	03-0077-028
176	Beeton Creek	03-0057-024
177	Beeton Creek	03-0057-014
178	Boyne River	03-0057-007
179	Boyne River	03-0057-003
180	Pine River	03-0057-005
181	Pine River	03-0057-010
182	Mad River	03-0057-021
183	Nottawasaga River	03-0057-023
184	Nottawasaga River	03-0057-006
185	Lamont Creek	03-0057-009
186	Batteaux River	03-0054-001
187	Pretty River	03-0053-001
188	Silver Creek	03-0047-001
189	Wye River	03-0070-002
190	Wye River	03-0070-001
191	Coldwater River	03-0076-003
192	Severn River	03-0077-013
193	Musquash River	03-0085-001
194	Muskoka Lake Outlet	03-0085-003
195	Moon River	03-0092-001
196	Rosseau Lake Outlet	03-0085-002
197	Indian River	03-0085-011
198	Rosseau River	03-0085-028